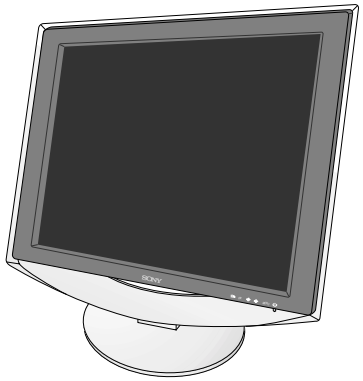
SDM-HS93

SERVICE MANUAL

US Model
Canadian Model
AEP Model
Chinese Model



TFT LCD COLOR COMPUTER DISPLAY

SONY

CONTENTS

SPECIFICATIONS 2
PRECAUTIONS 3
TIMING CHART 4
OPERATING INSTRUCTIONS 5
WIRING DIAGRAM 6
BLOCK DIAGRAM 7
ADJUSTMENT 8
EXPLODED VIEW 9
EXPLODED VIEW PARTS LIST 10

SPECIFICATIONS

1. LCD CHARACTERISTICS

Type	: TFT Color LCD Module
Active Display Area	: 19 inch(376.32(H) x 301.056(V))
Size	: 404.2(W) x 330(H) x 20(D)
Pixel Pitch	: 0.294 (Per one triad) x 0.294
Color Depth	: 16,777,216 colors
Electrical Interface	: LVDS
Operating Mode	: Normally Black
Backlight Unit	: 4-CCFL (Cold Cathode Fluorescent Lamp)

2. OPTICAL CHARACTERISTICS

2-1. Viewing Angle by Contrast Ratio 10
Left : -55° min., -70°(Typ) Right : +55° min., +70°(Typ)
Top :+55° min., +70°(Typ) Bottom : -55°min., -70°(Typ)

2-2. Luminance : 200(min), 250(Typ)

2-3. Contrast Ratio : 200(min), 450(Typ)

3. SIGNAL (Refer to the Timing Chart)

3-1. Sync Signal
• Type : Separate Sync

3-2. Video Input Signal

1) Type	: R, G, B Analog
2) Voltage Level	: 0~0.70 V(±5%)
a) Color 0, 0	: 0 Vp-p
b) Color 7, 0	: 0.35 Vp-p
c) Color 15, 0	: 0.7 Vp-p
3) Input Impedance	: 75

3-3. Operating Frequency

Horizontal	: 28 ~ 80kHz
Vertical	: 48 ~ 75Hz

4. Max. Resolution

Analog : 1280 x 1024 / 75Hz

5. POWER SUPPLY

5-1. Power : AC 100~240V, 50/60Hz , 1.0A

5-2. Power Consumption

MODE	H/V SYNC	VIDEO	POWER CONSUMPTION	LED COLOR
POWER ON (NORMAL)	ON/ON	ACTIVE	less than 50 W	GREEN
STAND-BY	OFF/ON	OFF	less than 1 W	AMBER
SUSPEND	ON/OFF	OFF	less than 1 W	AMBER
DPMS OFF	OFF/OFF	OFF	less than 1 W	AMBER
POWER S/W OFF	-	-	less than 1 W	OFF

6. ENVIRONMENT

6-1. Operating Temperature: 5°C~35°C (41°F~95°F) (Ambient)
6-2. Relative Humidity : 10%~80% (Non-condensing)
6-3. MTBF : 50,000 Hours(Typ) 30,000 Hours(Min)

7. DIMENSIONS (with TILT/SWIVEL)

Width	: 480 mm (18.89")
Depth	: 260 mm (10.25")
Height	: 439 mm (17.28")

8. WEIGHT (with TILT/SWIVEL)

Net. Weight	: 7.1 kg (15.65 lbs)
Gross Weight	: 9.4 kg (20.72 lbs)

PRECAUTION

WARNING FOR THE SAFETY-RELATED COMPONENT.

- There are some special components used in LCD monitor that are important for safety. ***These parts are marked ⚠on the schematic diagram and the replacement parts list.*** It is essential that these critical parts should be replaced with the manufacturer's specified parts to prevent electric shock, fire or other hazard.
- Do not modify original design without obtaining written permission from manufacturer or you will void the original parts and labor guarantee.

TAKE CARE DURING HANDLING THE LCD MODULE WITH BACKLIGHT UNIT.

- Must mount the module using mounting holes arranged in four corners.
- Do not press on the panel, edge of the frame strongly or electric shock as this will result in damage to the screen.
- Do not scratch or press on the panel with any sharp objects, such as pencil or pen as this may result in damage to the panel.
- Protect the module from the ESD as it may damage the electronic circuit (C-MOS).
- Make certain that treatment person's body are grounded through wrist band.
- Do not leave the module in high temperature and in areas of high humidity for a long time.
- The module not be exposed to the direct sunlight.
- Avoid contact with water as it may a short circuit within the module.
- If the surface of panel become dirty, please wipe it off with a softmaterial. (Cleaning with a dirty or rough cloth may damage the panel.)

⚠ CAUTION

Please use only a plastic screwdriver to protect yourself from shock hazard during service operation.

⚠ WARNING

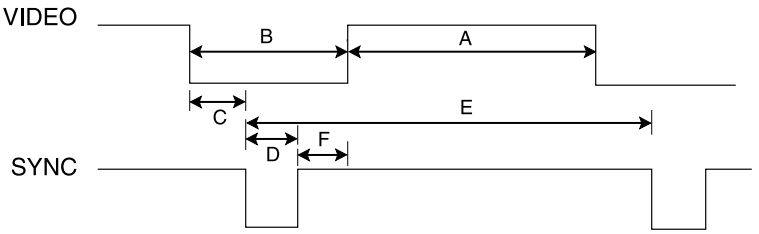
BE CAREFUL ELECTRIC SHOCK !

- If you want to replace with the new backlight (CCFL) or inverter circuit, must disconnect the AC adapter because high voltage appears at inverter circuit about 650Vrms.
- Handle with care wires or connectors of the inverter circuit. If the wires are pressed cause short and may burn or take fire.

TIMING CHART

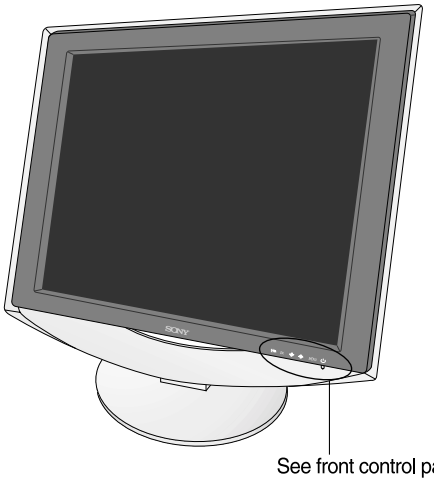
<< Dot Clock **(MHz),** Horizontal Frequency **(kHz)**, Vertical Frequency **(Hz)**, Horizontal etc... **(μs)**, Vertical etc... **(ms) >>**

Mode	H/V Sort	Sync Polarity	Dot Clock	Frequency	Total Period (E)	Video Active Time (A)	Front Porch (C)	Sync Duration (D)	Back Porch (F)	Blanking time (B)	Resolution
1	H	–	28.350	31.500	900	720	18	108	54	180	**720x400**
	V	+		70.156Hz	449	400	12	3	34	49	**70Hz**
2	H	–	25.175	31.469	800	640	16	96	48	160	**640x480**
	V	–		59.940Hz	525	480	10	2	33	45	**60Hz**
3	H	–	30.240	35.00	864	640	64	64	96	224	**640x480**
	V	–		66.667Hz	525	480	3	3	39	45	**65Hz**
4	H	–	31.500	37.50	840	640	16	64	120	200	**640x480**
	V	–		75.0Hz	500	480	1	3	16	20	**75Hz**
5	H	–	31.505	35.162	896	720	34	40	102	176	**720x480**
	V	–		59.901Hz	587	480	12	2	93	107	**60Hz**
6	H	+-	36.000	35.156	1024	800	24	72	128	224	**800x600**
	V	+		56.250Hz	625	600	1	2	22	25	**56Hz**
7	H	+	40.000	37.879	1056	800	40	128	88	256	**800x600**
	V	+		60.317Hz	628	600	1	4	23	28	**60Hz**
8	H	+	50.000	48.077	1040	800	56	120	64	240	**800x600**
	V	+		72.188Hz	666	600	37	6	23	66	**72Hz**
9	H	+	49.500	46.875	1056	800	16	80	160	256	**800x600**
	V	+		75.0Hz	625	600	1	3	21	25	**75Hz**
10	H	–	57.285	49.727	1152	832	32	64	224	320	**832x624 (MAC16") 75Hz**
	V	–		74.553Hz	667	624	3	3	37	43	
11	H	–	65.000	48.363	1344	1024	24	136	160	320	**1024x768**
	V	–		60.004Hz	806	768	3	6	29	38	**60Hz**
12	H	–	75.000	56.476	1328	1024	24	136	144	304	**1024x768**
	V	–		70.069Hz	806	768	3	6	29	38	**70Hz**
13	H	+	78.750	60.023	1312	1024	16	96	176	288	**1024x768**
	V	+		75.029Hz	800	768	1	3	28	32	**75Hz**
14	H	–	80.000	60.241	1328	1024	32	96	176	304	**1024x768 (MAC19) 75Hz**
	V	–		74.927Hz	804	768	3	3	30	36	
15	H	+	108.000	67.500	1600	1152	64	128	256	448	**1152x864**
	V	+		75.000Hz	900	864	1	3	32	36	**75Hz**
16	H	–	100.000	68.681	1456	1152	32	128	144	304	**1152x870 (MAC21) 75Hz**
	V	–		75.062Hz	915	870	3	3	39	45	
17	H	–	92.940	61.795	1504	1152	30	128	194	352	**1152x900**
	V	–		65.950Hz	937	900	2	4	31	37	**66Hz**
18	H	–	105.590	71.732	1472	1152	16	96	208	320	**1152x900**
	V	–		76.068Hz	943	900	2	8	33	43	**75Hz**
19	H	+	46.200	31.216	1480	1170	37	129	144	310	**1170x584**
	V	+		50.026Hz	624	584	3	3	34	40	**50Hz**
20	H	+	108.000	60.000	1800	1280	96	112	312	520	**1280x960**
	V	+		60.000Hz	1000	960	1	3	36	40	**60Hz**
21	H	+	108.000	63.981	1688	1280	48	112	248	408	**1280x1024**
	V	+		60.020Hz	1066	1024	1	3	38	42	**60Hz**
22	H	+	135.000	79.976	1688	1280	16	144	248	408	**1280x1024**
	V	+		75.025Hz	1066	1024	1	3	38	42	**75Hz**

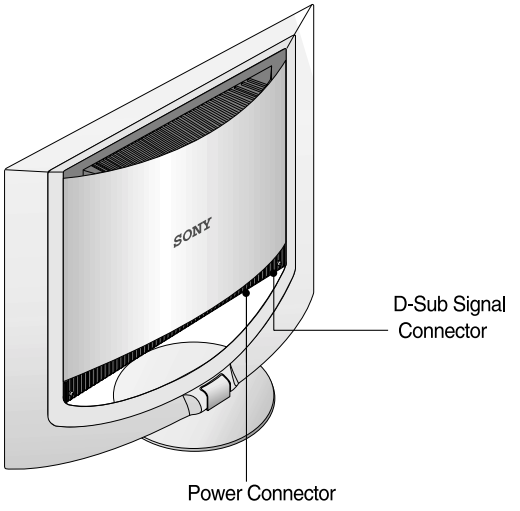


OPERATING INSTRUCTIONS

FRONT VIEW



REAR VIEW



Front Control Panel

1. **Power switch and indicator**
   This switch turns the dislay on and off.
   This power indicator lights up in green when the display is turned on, and lights up in orange when the monitor is in power saving mode.

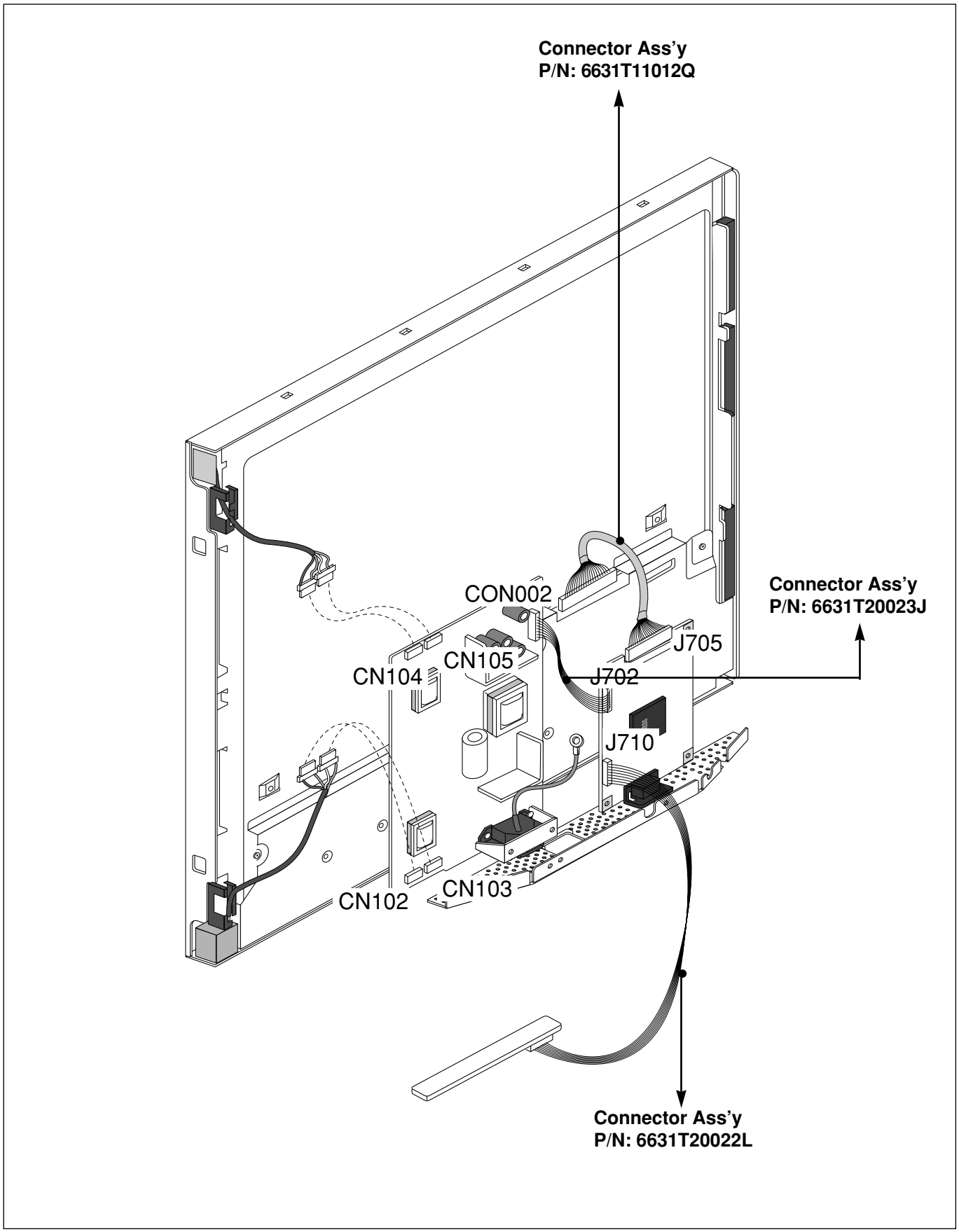
2. **MENU Button**
   This button display or close the main menu.

3. **△/▽ Buttons**
   These buttons function as the △/▽ buttons when selecting the menu items and making adjustments.

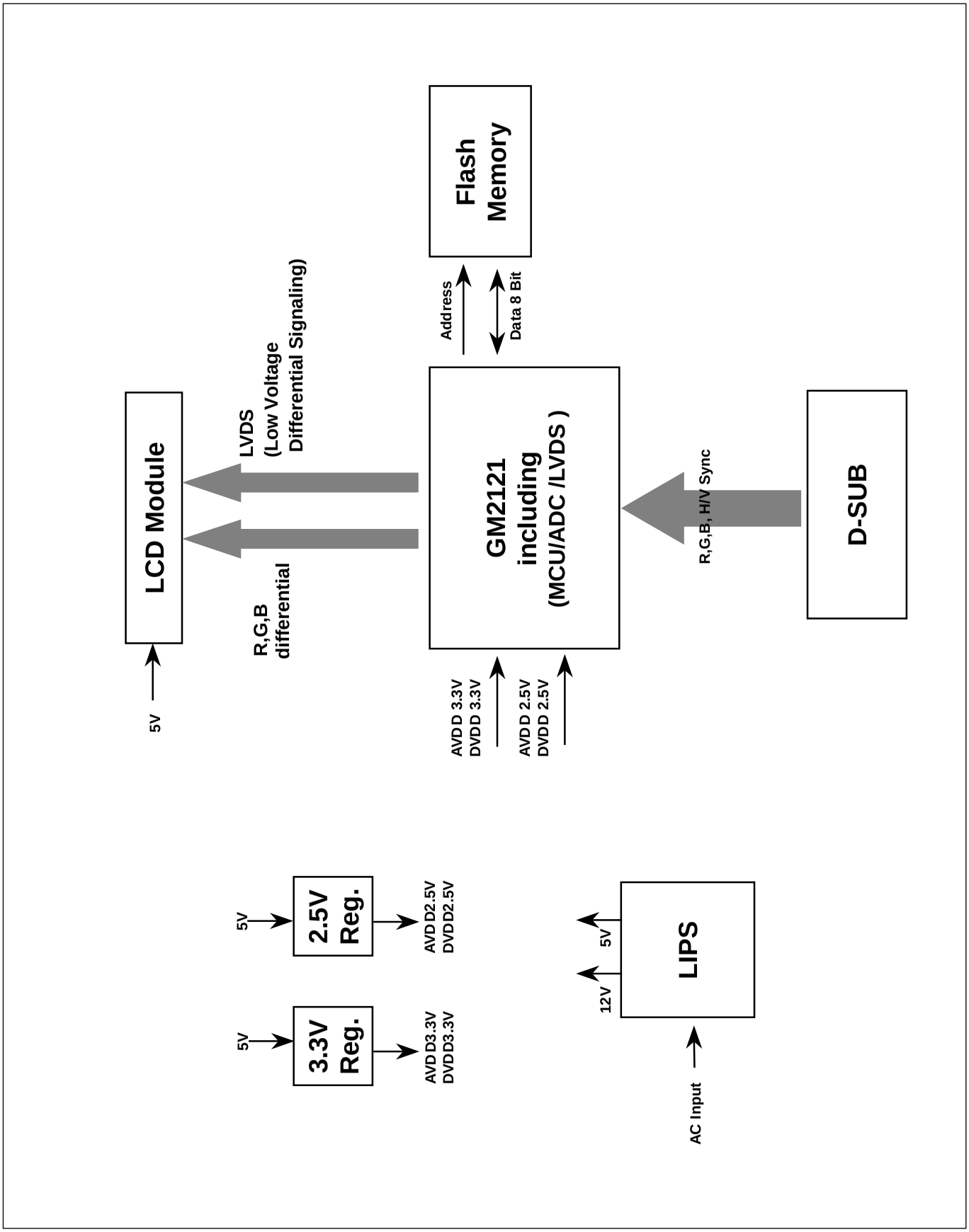
4. **OK Button**
   This button select the item or executes the settings in the menu.

5. **☼ Button(Backlight control)**

WIRING DIAGRAM



BLOCK DIAGRAM



ADJUSTMENT

1. Procedures of how to go to service mode.

1) Enter the service mode of this unit by turning on the power while pressing and holding the "↓" key simultaneously.
2) Press "MENU" key----MAINTAIN.
3) Press "OK" key to enter the service menu.
4) Select the desired function.
5) Press the "MENU" key to exit OSD.
6) Turn off the power and then turn on it again. The monitor then enters the normal mode.
   To enter the service again, repeat the procedure described above.

Note

W/B readjustment is required after the panel, board and microcomputer are replaced. However, be sure to perform aging for more than 30 minutes for RGB reset before W/B adjustment.

2. Setup

1) Prepare timing and pattern data for a signal generator according to the Sony timin specifications.
2) Connect a monitor video cable to the signal generator.
3) Put Color Analyzer(ex. CA-110) 50cm away from the monitor, specify it vertically in the center of the display, and adjust the focus to the optimum level using an eyepiece.
4) Put the monitor and Color Analyzer(ex. CA-110) in a light-shielded room.
5) Set up [SERVICE MODE] of the monitor.

3. Operation

Data is manually set to improve the productivity. The brightness, contrast, and backlight are set to 50, 70 and 100 respectively. After that, the default data of the color temperature to be adjusted is set.

4. Warm up time

Warm up for 30 minutes before performing any adjustment.

5. Adjustment for White Balance

a. Display Full white pattern at SXGA/60Hz.
b. Set up [SERVICE MODE].
c. Click "INITIAL EEPROM".
d. Click "WHITE BALANCE".

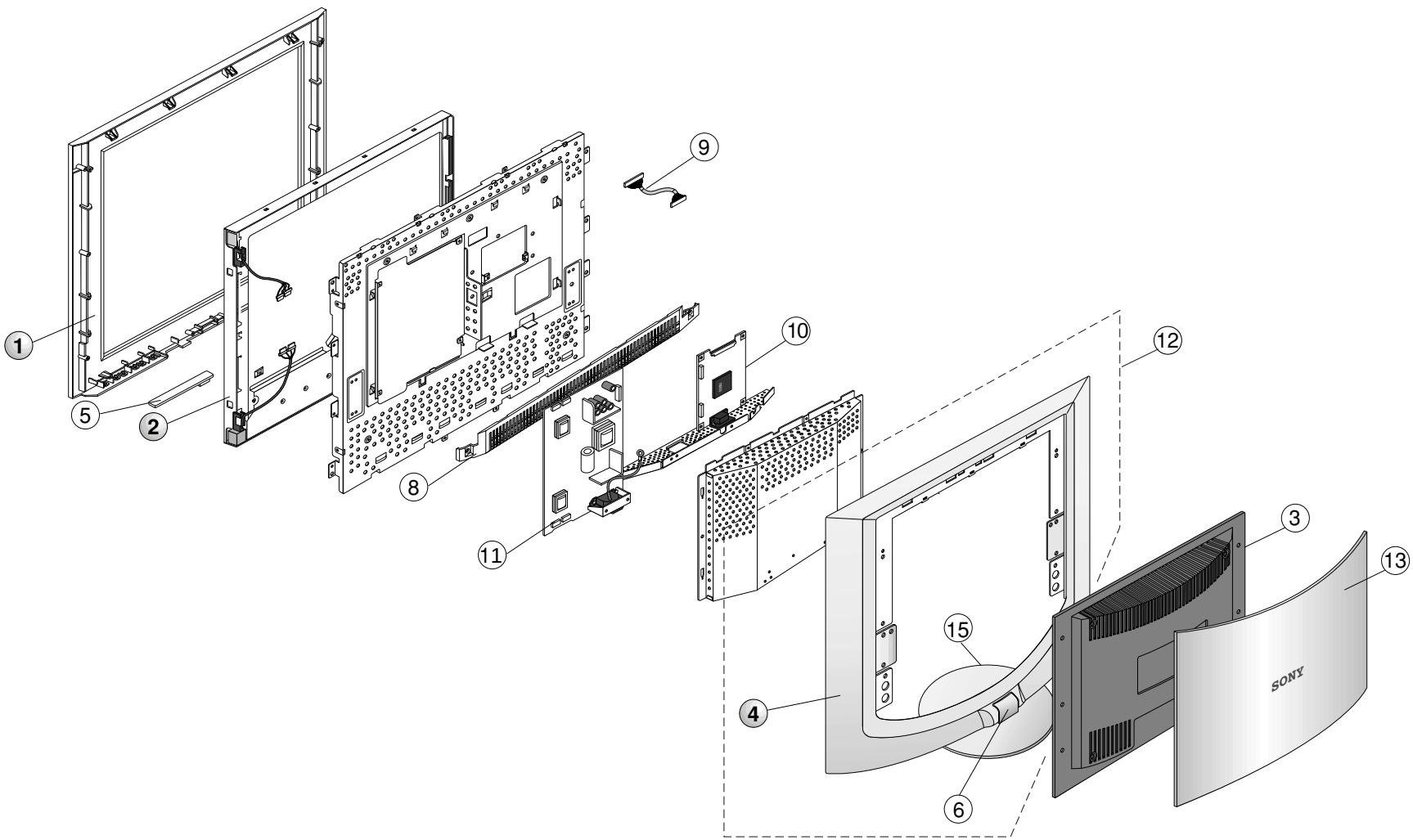
6. 9300K color adjustment

a. Select "9300K" in "COLOR TEMP" and enter.
b. Use a 35% IRE white video field in the primary mode.
c. Adjust "SUB CONTRAST " to secure the color temperature.
d. Press "OK" key to exit adjust mode.

7. 6500K color adjustment

a. Select "6500K" in "COLOR TEMP" and enter.
b. Repeat the adjustment procedure as steps b to d at 9300K.

EXPLODED VIEW



EXPLODED VIEW PARTS LIST

Ref. No.	Part No.	Description	Remark
1	X-4041-494-1	BEZEL ASSY(Gray)	3091TKL063F
	X-4041-495-1	BEZEL ASSY(White)	3091TKL063D
	X-4041-632-1	BEZEL ASSY(Blue)	3091TKL063E
2	1-805-347-11	LCD PANEL FLC48SXC8V	6304FFT002A
3	X-4041-488-1	BACK CABINET ASSY(Gray)	3809TKL043F
	X-4041-489-1	BACK CABINET ASSY(White)	3809TKL043D
	X-4041-629-1	BACK CABINET ASSY(Blue)	3809TKL043E
4	X-4041-491-1	CENTER CABINET ASSY	3043TKK112A
5	A-1405-186-A	H MOUNT/ CONTROL	6871TST373E
6	4-094-676-01	COVER, HINGE	3550TKK322A
8	4-094-671-01	COVER, BOTTOM VENT(Gray)	3550TKK318C
	4-094-671-11	COVER, BOTTOM VENT(White)	3550TKK318A
	4-094-671-21	COVER, BOTTOM VENT(Blue)	3550TKK318B
9	1-900-273-29	LVDS CONNECTOR ASSY	6631T11016Q
10	A-1405-187-A	A MOUNT/ SCALER	3313TL9003E
11	A-1405-185-A	G MOUNT/ POWER AC-DC	6871TPT239B
12	X-4042-662-A	CENTER CABINET ASSY WITH TILT SWIVEL ASSY	3043TKK112B
13	4-094-672-01	COVER, REAR(Gray)	3550TKK319F
	4-094-672-11	COVER, REAR(White)	3550TKK319D
	4-094-672-21	COVER, REAR(Blue)	3550TKK319E
15	X-4041-493-1	STAND ASSY	3043TKK120A
	4-094-454-01	PURSE LOCK	4930TKK026B
ACCESSORIES & PACKING MATERIALS			
	1-827-110-21	CABLE, D-SUB	6850TD9004C
	1-827-118-21	CORD SET, POWER SUPPLY (UC)	6410TUW002G
	*1-827-120-21	CORD SET, POWER SUPPLY (AEP)	6410TEW005D
	1-827-781-21	CORD SET, POWER SUPPLY (CH)	6410TCW004B
	4-094-157-01	CD-ROM (MANUAL) (AEP, CH)	3170TZ1226B
	4-094-506-01	CD-ROM (MANUAL) (UC)	3170TZ1226C
	4-094-158-01	QUICK SETUP GUIDE (UC, CH)	3828TUO206B
	4-094-158-11	QUICK SETUP GUIDE (AEP)	3828TUO206D
	* 4-094-347-01	INDIVIDUAL CARTON	3890TSE418A
	* 4-094-401-01	BAG, PROTECTION	3880TKZ009E
	* 4-094-687-01	CUSHION (UPPER)	3920TKE218A

9-978-784-02

Sony EMCS Corporation
Ichinomiya Tec

English
2003IR02-1
Made in Japan
© 2003. 9
SDM-HS93 (E)